Designing Studies Checkpoint 2

The next two questions refer to the following information:

Research Question: What is the combined effect of medication and diet on blood pressure in adult males?

A randomized, controlled experiment investigated this question using a random sample of 540 adult males as subjects. At the beginning of the study, researchers measured the blood pressure of all the subjects. Each subject was given a month's supply of either Drug A, Drug B, or a placebo, then was assigned to be on either a low-fat diet or a low-salt diet for that month-long period. At the end of the month, the researchers measured the blood pressure of each subject again, and compared the two blood pressure readings.

Question (1)

How many different groups are there altogether in this study?

A: 2
B: 3
C: 4
D: 5
E: 6

Feedback

A : 0

✗ This is not quite right. Notice that there were ***three*** different drug treatment groups (A, B, or placebo), and ***in each of these groups***, there had to be ***two*** different diet groups (low fat or low salt). Think about the other choices. (E) is the right answer.

B : 0

✗ This is not quite right. Although there were three different drug treatment groups (A, B, or placebo), notice that ***for each of***

✗ ***these groups***, there had to be ***two*** diet groups (low fat or low salt). Think about the other choices. (E) is the right answer.

C : 0

✗ This is not quite right. Notice that there were ***three*** different drug treatment groups (A, B, or placebo), and ***in each of these groups***, there had to be ***two*** different diet groups (low fat or low salt). Think about the other choices. (E) is the right answer.

D : 0

✗ This is not quite right. Notice that there were ***three*** different drug treatment groups (A, B, or placebo), and ***in each of these groups***, there had to be ***two*** different diet groups (low fat or low salt). Think about the other choices. (E) is the right answer.

E : 10

✓ Good job! There were ***three*** different drug treatment groups (A, B, or placebo), and ***in each of these groups***, there had to be ***two*** different diet groups (low fat or low salt), for a total of 3 * 2 = 6 different combinations of drug and diet in the study. So there were 6 different treatment groups that a subject could get assigned to.

Question (2)

Which of the following is/are the explanatory variable(s) in this study (choose all that apply)?

A: Blood pressure before the study
B: Blood pressure after the study
C: Difference in the two measurements of blood pressure
D: Type of drug given
E: Type of diet

Feedback

D,E : 10

✔ Good job! The study is looking at the effect of medication and diet on blood pressure. Thus, the type of drug and the type of diet are the explanatory variables. The difference in blood pressure is the response variable.

A : 0

✘ This is not quite right. The study is looking at the effect of medication and diet on blood pressure. Thus, the type of drug and the type of diet are the explanatory variables. The difference in blood pressure is the response variable. (D) and (E) are the right answers.

B : 0

✘ This is not quite right. The study is looking at the effect of medication and diet on blood pressure. Thus, the type of drug and the type of diet are the explanatory variables. The difference in blood pressure is the response variable. (D) and (E) are the right answers.

C : 0

✘ This is not quite right. The study is looking at the effect of medication and diet on blood pressure. Thus, the type of drug and the type of diet are the explanatory variables. The difference in blood pressure is the response variable. (D) and (E) are the right answers.

D : 0

✘ This is not quite right. You correctly selected one of the explanatory variables, but there is another one that you missed. The study is looking at the effect of medication and diet on blood pressure. Thus, the type of drug and the type of diet are the explanatory variables. The difference in blood pressure is the response variable. (D) and (E) are the right answers.

E : 0

✘ This is not quite right. You correctly selected one of the explanatory variables, but there is another one that you missed. The study is looking at the effect of medication and diet on blood pressure. Thus, the type of drug and the type of diet are the explanatory variables. The difference in blood pressure is the response variable. (D) and (E) are the right answers.

Question (3)

A simple random sample of 1,110 adult Americans is selected, and each person is asked the following question:

In light of the huge national deficit, should the government at this time spend additional money to establish a national system of health insurance?

Only 39% of those responding answered yes. The results of this survey:

A: are reasonably accurate because it used a large simple random sample.
B: probably overstate the percentage of people who favor a system of national health insurance because of the question's wording.
C: probably understate the percentage of people who favor a system of national health insurance because of the question's wording.
D: is inaccurate because of voluntary response.
E: is inaccurate because of convenience sampling.

Feedback

A : 0

✗ This is not quite right. Although it's true that the survey used a large random sample, there is something about this particular survey that might cause the results to be inaccurate. Think about the other choices. (C) is the right answer.

B : 0

✗ This is not quite right. Notice that the survey wording is designed to make you worry about any additional government spending. Think about whether that wording would tend to make people reply ***in*** favor, or ***not*** in favor. (C) is the right answer.

C : 10

✓ Good job! The survey wording is designed to make you worry

✓ about any additional government spending. That wording would tend to make people reply ***not*** in favor, so this is an example of bias due to non-neutral survey language.

D : 0

✗ This is not quite right. There is no voluntary bias in this survey, because the sample was ***random***, not voluntary. However, there is a different potential source of bias in this survey. Think about the other choices. (C) is the right answer.

E : 0

✗ This is not quite right. There isn't convenience sampling in this survey, because the sample was ***random***, so it wasn't selected only for the ease of the researcher. However, there is a different potential source of bias in this survey. Think about the other choices. (C) is the right answer.

Question (4)

The method of "Randomized Response" is:

A: a sampling method.

B: a method in which subjects answer the questions in a survey in a random order.

C: used to minimize the bias in the responses of subjects to sensitive questions.

D: a method in which subjects answer each of the questions in a survey with a random guess.

E: none of the above.

Feedback

A : 0

✗ This is not quite right. "Randomized response" isn't a ***sampling*** method, because it doesn't involve how the subjects are chosen to be interviewed. Think about the other choices. (C) is the right answer.

B : 0

✗ This is not quite right. In "randomized response," the word "randomized" doesn't refer to the order of the survey questions. Think about the other choices. (C) is the right answer.

C : 10

✓ Good job! "Randomized response" is a technique designed to disguise individual responses (thus putting the people more at ease about revealing embarrassing information) while retaining the overall proportional results (thus still making the study useful).

D : 0

✗ This is not quite right. There ***is*** something about the subject's answer that gets randomized in the "randomized response" technique, but it's not their answers to all the survey questions. Think about the other choices. (C) is the right answer.

E : 0

✗ This is not quite right. Remember that "randomized response" is a technique that is sometimes applied to survey responses. Think about the other choices. (C) is the right answer.

Please answer the question below. Your response will not be graded, but will be available for your instructor to read.

What is the main reason for using randomization in an experiment?

Feedback

**** : 0***

✗ Thank you for your response. It has been recorded and will be available for your instructor to read.

✗ You did not enter a response for this question.